



New Zealand Post

Air transport network

Challenge

Minimize New Zealand Post's air network costs

Approach

Utilize PlanOp to model then optimize the air distribution pattern

Results

- Revised the air transport network for the national movement of mail and courier products
- Achieved annual savings of \$780,000 on air transport costs
- Relieved two aircraft tours on low volume days
- Created contingency plan in the event of aircraft unavailability

New Zealand Post began its air network services in the early 1990s. With an average of 3.7 million letters to distribute over both north and south islands daily, an optimized air network strategy was critical to minimizing costs.

To produce a revised air transport network for the national movement of mail and courier products, New Zealand Post participated in a workshop with Carmen. The workshop focused on utilizing PlanOp, Carmen's logistics optimization software, to plan a national network for the postal organization. The broad business objectives of the workshop included producing cost savings in the operation of the network using the existing air transport fleet of seven aircraft, augmented by lower capacity aircraft. The workshop also involved:

- preparation of contingency plans to address major risks
- assessing the impact of volume changes

- identifying possible airport congestion
- accurate comparison of results with current air network plans.

The optimization strategy for PlanOp used in the workshop was based on a computerized mathematical model describing the distribution network. This model captured all of the potential transport links between the major mail hubs in New Zealand, together with their capacities, major cost contributions, and a range of subsidiary constraints that define mailing requirements.

The optimization algorithms in PlanOp were then used to solve the model formulation. Several iterations of the optimization approach were carried out, resulting in a range of solutions. By the conclusion of the workshop, the team had identified, costed and tested the robustness of the optimal air distribution pattern that was possible to implement. The project was extremely beneficial to New Zealand Post as they were able to identify and realize significant cost reductions in a short timeframe.

About New Zealand Post

New Zealand Post is internationally recognized as providing one of the more efficient and inexpensive postal services in the world. New Zealand Post's core business activities are message communication in letters, distributing courier and parcel items and financial transactions. It also provides distribution logistics as well as data processing and mail production.

About Carmen Systems

Carmen Systems is recognised as one of the world's leading software and operations research companies. Headquartered in Goteborg, Sweden, Carmen has major offices in Brisbane, Singapore, London, Montreal, Stockholm and Copenhagen. Carmen's products are:

- **PlanOp**
Distribution and logistics network planning
- **CRS**
Rail crew management
- **RSD**
Real time freight car planning
- **CCM**
Airline crew management
- **IPTIS**
Public transport journey planning
- **OR Services**
Operations Research consulting

"PlanOp was instrumental in allowing New Zealand Post to make the optimal network capital expenditure decision, which resulted in a more efficient transport network".

Bruce Benfell
Air Network Manager
New Zealand Post



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